**Names:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Scientific Method Lab**

Adapted from http://serc.carleton.edu/sp/mnstep/activities/27600.html

The purpose of this lab is to use the Scientific Method to solve a problem.

A) Observe and ask questions that lead to a problem

B) Form a hypothesis

C) Test the hypothesis with a controlled experiment by making observations and gathering data.

D) Analyze gathered data

E) Reject or Accept your hypothesis

F) Form a conclusion

**Materials**

2 small pieces of wax paper

1 meter long piece of string

1 meter stick

2 different pieces of bubble gun labeled A and B

**READ directions carefully before starting the lab**. Each group will need one piece of gum labeled A and one labeled B. Make 3 observations about each brand of gum and fill them in on the below table.

|  |  |  |
| --- | --- | --- |
|  | Gum A | Gum B |
| Observation 1 |  |  |
| Observation 2 |  |  |
| Observation 3 |  |  |

**Problem: Which piece of bubble gum blows the biggest bubble?**

Hypothesis: Make a prediction about which piece of gum will blow the biggest bubble and explain why.

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**Procedure:**

1. Start with brand A. The person with brand A will chew their piece of gum for **3 minutes.** The **person with brand B does not begin chewing** until all the tests on brand A are completed.

2. Blow a bubble.

3. Using a string, your partner will measure the diameter (distance across) the bubble. Put the string on the meter stick to measure the distance in centimeters (cm).

4. Record the measurement in your data table below. Repeat the process two more times for trials 2 and 3 of brand A.

5. Find the average bubble size for brand A (add all the distances up and divide by 3) and put in the data chart.

6. Repeat steps 1-5 with brand B gum.

**Data Table:** Design a data collection table to fit the data you will be investigating

**Conclusion: Forming a theory**

What brand of gum is the best at blowing bubbles and why? Do you accept or reject your hypothesis? Support your answer with observations and your data.

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**PART 2**

Combine with another group to complete this part of the lab.

**Problem:** How does gum stretchability relate to bubble size?

**Hypothesis:** Make a prediction that would answer the above question.

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**Procedure:**

1. Start with the person with brand A rolling their gum into a ball.

2. Hold the gum (brand A) by using the piece of wax paper. Another person in the group would hold the same piece of gum with another piece of wax paper.

3. Holding the gum near your chest, begin to walk slowly backwards.

4. Have the third person in the group hold the meter stick and measure the distance in centimeters the gum stretched before breaking.

5. Record the measurement in your data table below. ONLY DO ONE TRIAL

6. Repeat steps #1-5 for brand B gum.

**Data Table:** Create a data table to fit the data you will be gathering

**Conclusion:**

**COMPARE DATA FROM BOTH GROUPS IN PART 1 AND PART 2**

How does gum stretchability relate to bubble size? Do you accept or reject your hypothesis? Back up your statements with data.

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With your lab partner, list 5 variables that may affect the outcome of this experiment.

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2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Explain how the data you collected can be described as both qualitative and quantitative

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Were SI units used in this lab? Explain. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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List any questions you still have about the scientific method.

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